

the practitioner, showing him the conditions which experts have found will yield to physical methods.

The field has just been scratched. We know considerable about the massive destructive effects of x-ray and radium since the cancer problem has called our attention to the successful application in that disease. The effects of these agents in milder dosage where the immediate results are apparently stimulating rather than destructive is also interesting. This is especially true in the so-called "hypo" phases of endocrine disturbances. In other words these potent agencies are opening the fields that the endocrinologist has been attempting to rejuvenate by substitution therapy. Likewise in the various inflammatory conditions physiotherapy has been used long enough to show us that it competes with surgery in some cases. It will not replace surgery in all cases, but it will be a useful ally in restoring health to cells and tissues which have long been crippled by infection and exudation. The various skin conditions—acne, carbuncle, furuncle, tuberculosis of the glands, joints and peritoneum—are all amenable to physiotherapy. What the future has in store for us is still unknown, but what is known should be mastered so that physical methods will take their rightful place in the evolution of scientific therapy.

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Tropical Medicine

Clonorchis Infection—For two reasons the physicians in California are concerned with the disease called clonorchiasis. First, it is a fairly common parasite among the Chinese and Japanese residents of California. Second, immigrants subject to it are excluded under the immigration regulation forbidding admission to persons having "dangerous contagious disease." "Contagious" is interpreted to mean "communicable." In the matter of treatment, therefore, as well as in the question as to the rightful exclusion of this disease, the physicians in California have a direct interest.

The clonorchis, or liver fluke, so far as is known, only invades man in one way. The encysted larvae are ingested with uncooked fish, are released in the duodenum and make their way to the bile capillaries where the adult worms develop. If there is bile obstruction the pancreas may be invaded. These worms are leaflike or trematode worms, and damage resulting from their presence seems to be proportional to their number. E. C. Faust at Peking Union Medical College has recently made solid contributions to the knowledge of their life history. His work corroborates and extends the results of several excellent Japanese parasitologists, *e. g.*, Nagano and Katsurada.

Briefly, Faust finds that the ova of clonorchis, leaving the human host in the feces, are swallowed by certain species of fresh-water snails, provided the water is of sufficient warmth. In the snail, development takes place from a larva into a free-swimming cercaria which is very delicate, but

which under proper conditions of warmth is swallowed by certain species of fish and encysts in their flesh. The common oriental use of dried, raw and insufficiently cooked fish transfers the infection to man. No other means of human infestation is known.

The longevity of the adult worms in man is calculated at from five to fifteen years at the maximum. It is to be noted, however, that Dunlop Moore has reported two cases where the infection persisted twenty and twenty-five years respectively after leaving China. In any case it is a self-limited disease, barring reinfection.

Inouye, a Japanese clinician, has classified the disease as follows: (a) mild cases with no evident symptoms; (b) secondary stage, with diarrhea, edema and hepatic hypertrophy; and (c) severe type aggravated by involvement of hepatic portal system. In Japanese patients he found jaundice rare, but noted 50 per cent with enlarged, smooth livers; 33 per cent with dull pressure pain over liver; 12 per cent with enlarged spleen; 15 to 40 per cent with ascites; 66 per cent with diarrhea; and only 4 per cent with normal stools. In China the disease as a rule is not considered serious or dangerous. As has been said, mass of infection is of primary importance, and exposure to conditions allowing frequent or constant reinfection is a major consideration in the gravity of the disease.

Treatment in general has been ineffective. However, in late years cases have been reported cured by G. C. Shattuck in Boston and Reed and Wyckoff in San Francisco, using courses of tar-tar emetic intravenously, preferably in association with neosalvarsan.

Two problems are evident in California with reference to clonorchiasis: (1) Is there danger of the disease spreading from patients already in California? (2) Is there danger of endemic foci being established in California? The answer to both questions is in the negative. Wayson notes that no infection has ever been proved in California snails, even though species presumably infectible are abundant. He also points out that California streams are cold, thus inhibiting and destroying these delicate larvae and cercariae. The intermediate cycle requires specialized molluscan and piscine hosts and the necessary warmth of pond waters. In Pacific Slope states the previous factors plus the good sewage disposal and the non-use of uncooked fish make it a practical impossibility for clonorchiasis to spread or gain endemicity on the Pacific Coast. No single case of such spread or transmission has yet been reported. These considerations lead one to question the justification of rating clonorchiasis as a "dangerous contagious disease," and as a sufficient ground for immigration exclusion.

That this conclusion is justified is shown by the very recent removal of clonorchiasis from the list of excludable diseases.

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